DOCUMENT RESUME

ED 147 260 95 SP 011 796

AUTHOR Baum, Michael; And Others
TITLE Sex and Grade Level of Student as Context Variables in Elementary School Teaching. Report No. 76-12.
INSTITUTION Texas Univ., Austin. Research and Development Center for Teacher Education.
SPONS AGENCY National Inst. of Education (DHEW), Washington, D.C.
PUB DATE Dec 76
CONTRACT NIE-C-74-0089; OEC-6-10-108
NOTE 33p.

EDRS PRICE MF-$0.83 HC-$2.06 Plus Postage.
DESCRIPTORS *Age Differences; *Elementary Education; Interaction Process Analysis; *Sex Differences; *Student Characteristics; *Student Teacher Relationship; *Teacher Response

ABSTRACT

Low-inference classroom observational data were collected on 362 children in four elementary schools (grades two to five) who had been consistently ranked by two successive teachers over a two-year period. Teachers ranked students on one or more of thirteen bipolar scales assessing personality characteristics and teacher expectations. Two-way analyses of variance were employed using grade and sex as classifying variables. Results indicated that although teachers generally responded similarly to both sexes, subtle differences emerged in terms of differential patterns of teacher-student interaction, especially in response opportunity styles, private work contracts, differential acceptance of child-initiated, nonacademic requests, and both the teachers' and the students' affective responses to the dyadic interactions. Differences among grades indicated a shift from a private to a public focus, with more interactions being work centered. These differences were discussed in terms of maturation and increased socialization of the students to teacher expectations. (Author)

****
* Documents acquired by ERIC include many informal unpublished *
* materials not available from other sources. ERIC makes every effort *
* to obtain the best copy available. Nevertheless, items of marginal *
* reproducibility are often encountered and this affects the quality *
* of the microfiche and hardcopy reproductions ERIC makes available *
* via the ERIC Document Reproduction Service (EDRS). EDRS is not *
* responsible for the quality of the original document. Reproductions *
* supplied by EDRS are the best that can be made from the original. *
****

ED147260

SCOPE OF INTEREST NOTICE
The ERIC Facility has assigned this document for processing to: SP TM
In our judgement, this document is also of interest to the clearinghouses noted to the right. Indexing should reflect their special points of view.

Sex and Grade Level of Student as Context Variables in Elementary School Teaching

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION

THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL NATIONAL INSTITUTE OF EDUCATION POSITION OR POLICY

Michael Baum

Jere E. Brophy

Carolyn M. Evertson

Linda M. Anderson

W. John Crawford

December 1976

Report No. 76-12

The University of Texas at Austin

SP011 796

This project was supported by the National Institute of Education Contract OEC 6-10-108, Research and Development Center for Teacher Education, and by Contract NIE-C-74-0089, Correlates of Effective Teaching. The opinions expressed herein do not necessarily reflect the position or policy of the National Institute of Education and no official endorsement by that office should be inferred.

Sex and Grade Level of Student as Context Variables in Elemetary School Teaching

In their major review of research on teaching, Dunkin and Biddle (1974) distinguished among presage, process, context, and outcome variables, and concluded that failure to take context variables into account was probably a major reason for the weak and confusing relationships between processes and outcomes in classroom research. Other researchers generally agreed, and more recent efforts have included attempts to take context into account systematically by controlling for it or building it into the research design (c.f. Brophy and Evertson, 1976; Stallings, 1975). In addition, recent reviews of classroom research have stressed context differences in trying to explain conflicting process-outcome findings, and have stressed context factors that must be considered in trying to generalize findings from particular studies (Brophy and Evertson, 1976; Rosenshine, 1976). The present study extends this line of inquiry by investigating how sex and grade level of student, two basic context variables, affect classroom processes in the elementary grades.

A great deal of research on student sex as it relates to teacher-student interaction has been reviewed by Brophy and Good (1974). Taken together, many studies indicate that boys are more active and thus more salient in the classroom than girls, so that as a group they usually have more of every kind of interaction coded, desirable or undesirable. However, boys are much more variable than girls, tending to rank more toward the extremes

of the distributions on such variables as achievement, conformity to classroom rules, initiation of interactions with the teacher, and degree to which they are liked by the teacher. In most classrooms, a subset of boys who are high in achievement and desirable in their personal qualities tend to have unusually favorable interactions patterns with the teachers, and another subset tends to be low in achievement and alienated from teachers and/or schooling so that they have high proportions of negative contacts with the teachers, many of them occurring when teachers try to get them to do their work or behave. Boys as a group are usually higher than girls as a group on measures of misbehavior and teacher criticism and discipline, primarily because of the very high rates compiled by the alienated boys. At the same time, boys as a group are usually higher than girls on teacher praise and other measures of presumably desirable interaction patterns, primarily because of the high scores for the subset of "stars." In any case, boys tend to be more active and initiatory in the classroom, so that they exceed girls on group measures of both desirable and undesirable behavior.

Grade level is generally recognized as an important context variable, but it has seldom been investigated systematically. However, Brophy and Evertson (Note 1), based upon data from several different studies at different grade levels, suggested that there are four general stages in the relationship between student age (grade level) and classroom processes:

1. (Grades 1-3). Instruction concentrates on initial learning and mastery of the fundamentals of reading, writing, and arithmetic. There is much reliance on small group instruction, and students need to be monitored closely. Students are generally

adult oriented and compliant, but teachers must socialize them to the pupil role in addition to instructing them.

2. (Grades 4-6). Instruction shifts from mastery of the fundamentals to use of these fundamentals for learning other things. There is more whole class instruction, and more discussion. Students now are capable of more independent and prolonged learning activities, and they require less continuous monitoring by the teacher. Most have been socialized to the role of pupil and still remain adult oriented, so that classroom activities focus heavily on instruction and minimally on socialization.
3. (Grades 7-9). In these grades, preadolescents and adolescents begin to question and sometimes defy authority and go through the many other cognitive and personal changes associated with adolescence in our society. Consequently, teachers must deal much more often with direct defiance and serious disruption, and schooling begins to stress socialization as much or more than instruction.
4. (Starting about grade 10). As students pass through adolescence, and as the most alienated students drop out of school, schooling once again concentrates heavily upon instruction and learning as in stage 2. However, the students now are cognitively and emotionally mature, so that schooling is much more a matter of self-managed learning, with textbooks and independent work becoming more important relative to the activities of the teacher. The students are neither positively oriented toward the teachers

as models and identification objects, as they were when they were younger, nor negatively disposed toward teachers in their roles as authority figures, as they were previously. The result is that socialization concerns virtually disappear, and teachers playing the teacher role and students playing the student role concentrate on learning.

The term "stage" is used in a loose sense in this model, and the grade levels are approximate. The model is based upon well established developmental events which occur in the sequence described, but at different rates for different individuals. For example, the process would be speeded up in schools serving primarily high SES or primarily low SES students, because psychosocial maturity in these two types of students develops faster than it does in more average students (with contrasting results, however). The present paper investigates the grade differences in classroom process variables with respect to this model and to the interaction of grade with sex of student.

Method

The data come from the Student Attribute Study, a two-year project designed to identify student behaviors and patterns of teacher-student interaction related to the formation of teacher attitudes about and perceptions of students. For a summary of the findings relating to these questions, see Brophy, Evertson, Anderson, Baum, and Crawford, Note 2. Data from the study were used for the present investigation because four consecutive grade levels were included and the process data are believed to be representative of typical classroom processes in self-contained classrooms at the

grade levels studied.

Subjects

Process data were collected on 181 boys and 181 girls in 27 classrooms in grades 2-5 (see Table 1). The Student Attribute Study involved analyses of the behavior and interaction patterns of students who had been rated consistently on one or more of 13 attribute rating scales by two different teachers across two different school years. Consequently, the sample included all students who were in self-contained classrooms in four elementary schools (team taught classes were excluded), who had been present for the first round of teacher ratings early the previous year, and who still were present in the school during the second semester of the second year, when the data were collected. Essentially, then, the sample included students who had been in their respective schools and remained there for two years, being assigned to self-contained classrooms each year. Students who were assigned to team taught classrooms in either year, students who left before the process data were collected, and students who entered the school after the beginning of ratings the previous year all were excluded. Remaining was an average of 13.4 students per classroom, or about half of an average class.

Insert Table 1 About Here

All four elementary schools included in the study served predominately white populations. Three contained predominately upper and lower and lower middle class students. The students in the fourth school were more variable in their social class backgrounds, although the majority were middle and

upper middle class. A few black and Spanish-surnamed children attended each school, but neither group was large enough to allow separate analyses. All of the teachers were female.

The students are believed to be representative of pupils in their grades in their school system. Assignment to self-contained classrooms was random. Residential stability vs. mobility was not random, but the mobility observed was due to individual family variables and not to larger trends (i.e., the schools were not located in racially or ethnically changing neighborhoods). Almost all elementary school teachers in the city at the time of the study were female, so the classrooms were typical in this respect as well. It should be noted that the elementary schools went only through the 5th grade, because the city had established 6th grade centers as part of its desegregation plan. Consequently, the 5th graders were the oldest children in the schools and had begun to acquire some of the characteristics associated with 6th graders in other elementary schools. Other than this, the students in the sample are believed to be generally representative of students in predominately white elementary schools being taught in self contained classrooms.

Procedures

Process data were collected with a multifaceted, low inference coding system designed specifically for the Student Attribute Study (Brophy, King, Evertson, Baum, Crawford, Mahaffey, and Sherman, Note 3). All dyadic interactions between the teacher and the target students were recorded, as well as certain "critical behaviors" engaged in by the students independently or with

others. Interactions were classified according to type, teacher vs. student initiation, frequency, and affective involvement (if any). Major types included public response opportunities, subdivided into small group activities and general class activities; private dyadic interaction such as work, procedural, or social interaction; and behavior related interactions. Unique numbers were assigned to each of the 362 children involved and were used to identify all interactions recorded. This made it possible to use the student as the unit of analysis in compiling scores. Seventeen classroom observers collected the data, after being trained to reach 80% interrater agreement for each of the major sections of the coding system. Each classroom was then observed for 10 half-day periods, 5 by one observer and 5 by another. The raw data from these observations were tabulated and transformed into rates and proportion measures.

Data Analyses

The system yielded a total of 164 classroom process variables, 156 of which had enough variance to be subjected to a two-way analysis of variance using sex and grade (four levels - 2nd through 5th) as classifying variables. Complete data for all main effects and interactions can be found in Baum, Brophy, & Evertson, Note 4.

Results

The results for sex main effects will be summarized briefly without presentation of data, because they mostly replicate previous findings and are straightforward. Sex by grade interactions also will be discussed

briefly without presentation of data, because the percentage of these which reached the .05 level of significance was actually below chance expectation, and only a few are readily interpretable. Consequently, data presentation will concentrate on the main effects for grade level, although even here only those effects considered interpretable will be discussed. Grade effects were considered interpretable if they revealed a linear increase or decrease in the process measure with grade level, or some variation on this general theme, such as a low rate for grades 2 and 3 followed by a notable increase at grade 4 which was maintained at grade 5.

Sex Effects

Sex effects reached the .05 level of significance on 45 of the 156 variables analyzed. In public response opportunity situations, girls volunteered more often and boys called out answers more often. Also, girls received more praise after volunteering correct answers, and boys received more praise after calling out correct answers or giving the correct answers when called on as nonvolunteers. Student differences presumably caused the differences in teacher patterns of praise, but there were no overall differences in number of response opportunities, praise of good responses, criticism of poor responses or failures to respond.

Private contacts showed more sex differences. Boys initiated more contacts concerning their work than girls, and teachers also initiated more such contacts with the boys than they did with the girls. Even though they had more private work contacts with the teachers, the boys were criti-

cized proportionally more often during such contacts, and they responded proportionally more often to the teachers with negative affect. Girls were more likely than boys to seek out the teachers for approval seeking contacts, in which they showed completed work in the expectation of getting praise or permission to do something else. These sex differences indicate that girls generally were able to work independently with less continuous supervision by the teacher, and were generally more successful in completing their assignments quickly. The boys were more likely to have trouble and need to seek out the teachers, and the teachers also sought out the boys more frequently, presumably for a combination of instructional and managerial reasons.

Girls were more likely than boys to initiate contacts with the teachers in order to request permission to do some housekeeping chore, to request permission or help for some personal concern, and to tattle on other students. Furthermore, even though they initiated all three of these kinds of contacts more often than boys, the girls were more likely to receive a positive response to these initiations. These data may reflect a combination of greater efficiency in doing work and thus more time available for other things on the part of the girls, more sophisticated and appropriate requests on the part of the girls, and/or teacher favoritism of girls. There were no main effects for student initiated social contacts with the teachers.

The teachers initiated more personal requests with the boys. These were situations where the teachers asked the boys to clean up their desks, take off their coats, put their things away, or perform other self-management tasks. The fact that teachers initiated such interactions with boys more

often than with girls suggest that the boys were not completing these tasks independently as much as girls were and thus required more teacher monitoring and initiation. In general, girls were more likely than boys to initiate private interactions with the teachers, and more likely to receive a positive response when they did so. Conversely, the teachers were more likely to initiate private interactions with boys than with girls, and the data suggest that supervision and discipline were usually involved in these initiations.

Finally, the data for behavior related contacts revealed the usual imbalance: boys presented behavior problems and were disciplined because of them much more often than girls. In addition to large quantitative differences, the data also revealed that boys had high proportions of serious misbehavior, behavioral contacts involving negative teacher responses, and defiance or aggression directed at the teachers. Thus, boys acted out both more often and more disruptively/defiantly than girls. Girls had higher proportions of behaviors indicating poor coping behavior (crying, becoming emotionally upset, pouting, and sulking).

In general, these sex differences reflect sex role socialization in our society, and they replicate the kinds of sex differences noted previously in other studies. They are perhaps unusually clear in showing that boys are generally much more threatening and demanding than girls, and that the differential treatment of the two sexes by the teachers is relatively minor compared to the differential treatment of teachers by boys and girls.

Grade Effects

Insert Table 2 about here

Grade main effects reached the .05 level of significance for 57 of the 156 variables analyzed. However, only 34 of these were linear or otherwise interpretable. The first section in Table 2 concerns the frequency of dyadic contacts with teachers, especially response opportunities in public situations. The first variable reveals that the rate of dyadic contacts with the teachers was higher in grades 2 and 3 than in grades 4 and 5. The next two variables show that the percentages of dyadic contacts which were public response opportunities increased between grades 2 and 3 vs. grades 4 and 5. In combination, these data show that students interact with teachers on an individual basis less often as they progress through the elementary grades, and increasing proportions of the interactions that they do have occur during academic response opportunity situations rather than in private contacts. Even so, over 70% of the dyadic contacts were private contacts in all four of the grades studied. This again indicates something pointed out previously by Brophy and Evertson (1976): verbal interaction in public settings, which has been stressed so heavily in classroom research, is not the predominant setting for classroom processes in the elementary grades. Private contacts and independent work are more frequent and probably more important.

The next three variables indicate that small group settings, particularly reading groups, drop off drastically after the 4th grade. Starting around 5th grade, public response opportunities occur mostly in whole class settings. This shift seems appropriate, because students can benefit from instruction in large groups and require less continuous monitoring as they get older. The seventh variable reveals a related trend: the teachers allowed the

students to call out answers more often as they got older. Presumably, this indicates that the students became better socialized to the student role and began calling out more appropriate answers at more appropriate times. Teachers in the early grades stress that students are not to call out unless first recognized, but by the 5th grade 20% of the response opportunities in whole class situations occurred because the student called out the answer. In general, these trends in dyadic contacts with the teachers in public response opportunities indicate a shift from more personalized and individualized interactions toward more public and academic interactions across the grade levels studied.

The next two variables concern teacher praise and criticism of student answers in public response opportunity situations. These data indicate increases in both praise and criticism given in response to the answers of students who were called on as non-volunteers originally. The facts that these reactions occurred when teachers called on students as non-volunteers, that praise increased in the small group setting (which was being phased out), and that criticism increased in the general class setting (which was becoming more and more predominant), all suggest that the teachers were trying to reinforce more systematically. Students who are called on as non-volunteers are being held accountable in a deliberate way by the teachers, and those who succeed with good answers tend to get rewarded with praise. Those who fail to respond or give the wrong answer begin to get criticized, although the rates of criticism remain quite low (even in 5th grade, only 1 poor response in 50 was criticized).

The next 34 variables deal with teacher- and student-initiated private interactions. Variable 10 indicates that the proportion of total dyadic contacts which were not related to work decreased after the third grade, again indicating that school becomes less personal and more academic with time. This trend is elaborated in the next three variables, which indicate that teacher initiated interactions relating to work increase with grade, while those relating to housekeeping matters decrease.

The same trend is seen in the child initiated contacts. Variables 14 and 15 indicate increases in the percentage of child initiated contacts which were related to work as the children got older, and variables 16 through 21 indicate decreases in child initiated contacts for approval seeking, housekeeping requests, tattling, and personal requests. The only exception to this trend away from nonacademic contacts with teachers occurred for child initiated contacts, which increased with grade level. Taken together, these data indicate that, with age, children had less need or desire to approach the teachers to tattle on other children, to seek teacher approval for good work, or to seek permission to perform household tasks or meet personal needs. This indicates both development away from dependency upon and identification with adults and growing independence and self-management abilities. The increase in social contacts indicates growing verbal sophistication of the sort that would enable students to carry on conversations with their teachers, and the rising percentages indicate that students were willing to do so (but, as we will see, grade level interacted with student sex for this variable).

Variables 23-25 deal with teacher reactions to student initiation. Variable 23 indicates that the teacher refused student attempts to initiate work related contacts about 8% of the time in 2nd grade, but only 2% of the

time thereafter. Presumably, this indicates that second graders had not yet come sufficiently socialized to the role of pupil to avoid coming to teachers at inappropriate times (such as when they were busy conducting reading groups) or for inappropriate reasons (such as seeking help prematurely or unnecessarily when the students could work out the problem themselves if they tried). The idea that students are learning to initiate interactions with the teacher at times the teacher considers appropriate is supported by the next variable, which indicates that teachers less often refused and more often gave feedback to students initiating social contacts as the students got older. Again, the major difference is between second grade and subsequent grades, although slight additional changes in this same direction are observed at each succeeding grade. These data indicate that even by second grade, teachers still have to concentrate on socializing students about when and how to approach them to initiate contacts. Apparently this is learned by most students by third grade, however.

Variables 26 and 27 indicate that the frequency of behavioral contacts dropped steadily across the grade levels observed. This bears out what was expected on the assumption that children in these grade levels would gradually become more socialized to the role of pupil while retaining a general disposition to conform to authority. However, a portent of the future is seen in variable 28, which indicates a rise in the percentage of behavioral contacts involving aggression towards peers (after it had been falling previously). In general, we would expect measures of this and other forms of misbehavior that involve disruptive interpersonal relationships to increase in the coming years. Meanwhile, behavioral contacts which occur because children are confused would continue to decrease.

The last six variables deal with teacher reactions to desirable and undesirable student behavior. Praise of desirable behavior was frequent in 2nd grade but dropped off drastically thereafter. Data from developmental psychology suggest that this pattern is appropriate, because praise from adult authority figures gradually stops being rewarding and may even become punishing as students develop from adult orientation toward peer orientation. Less appropriate behavior was indicated by the 5th grade teachers, who tended to hold up students as examples to the class more often than teachers in the early grades did, even though this is highly unlikely to be effective. This may not be a reliable finding, however, because even the rates for 5th grade are quite low.

The remaining variables deal with teacher responses to misbehavior by students. They indicate that as the students got older, the teachers were able to respond successfully to misbehavior with simple management statements (telling the students to stop what they were doing and/or get busy at something else), without having to rely on warnings, threats, punishments, or nonverbal intervention such as moving close to students or gesturing toward them. This is another example of the trend noted earlier for the quality of interaction in classroom to become less personal and more academic across the grades studied.

Interaction Effects

Few interaction effects were statistically significant, and not all of these were interpretable. The interpretable ones will be discussed, however, because many of them elaborate or qualify some of the grade main effects reported previously.

Many of these interactions involved housekeeping requests. When teachers initiated housekeeping requests, they were more likely to thank boys than girls for completing them in the second grade, but this sex difference was reversed thereafter. The same pattern was true of housekeeping requests which were presented in the form of rewards (that is, the teacher indicated that students would be allowed to perform the housekeeping chore as a reward for having done something desirable. These findings may have occurred because girls are generally better behaved, because teachers favor the girls, and/or because girls perceive the opportunity to do classroom housekeeping tasks as rewarding and boys do not. The latter possibility is reinforced by the finding that requests for permission to perform housekeeping tasks were very low across all four grades among the boys, but were much higher among the second grade girls (and lower thereafter). Compared to the other groups, the second grade girls were much more oriented toward performing tasks for the teachers. Perhaps the second grade teachers were still trying (apparently without success) to develop a similar orientation among their male students, and teachers at higher grades recognized the futility of this and stopped trying. In any case, the second grade teachers' tendency to thank the boys for performing housekeeping tasks did not increase their tendency to ask for permission to do so. In contrast, girls initiated such requests more often, were approved more often, and gradually came to be thanked more often for their help.

A similar sex difference in the value placed upon teacher approval was seen in an interaction for student initiated approval seeking requests. Approval seeking dropped with grade level, but the proportions for males were generally lower and dropped more quickly.

Perhaps supprisingly, a greater proportion of the tattles by boys were approved by the teachers in the second grade, although more tattles by girls were approved thereafter. Except for the reversal at the second grade, the data on tattling fits with expectations based on general sex role learning. Perhaps this is another indication of a special attempt by the second grade teachers to socialize the boys to be more like the girls in their orientation toward schooling (or, alternatively, to treat them as if they were so oriented, even though they apparently were not).

An interesting and unusual finding concerned the proportion of teacher initiated personal contacts to which the child responded with some kind of clearly positive reaction (warmth, gratitude, happiness, etc.). The percentages for boys were generally low across the four grades (.09, .02, .07, and .08, respectively), while the percentages for girls started out high and dropped to nothing (.21, .15, .03, and .00, respectively). Recall that teacher initiated personal requests involved asking students to clean up their desks, take care of their personal possessions, or do other things that they should have done anyway without being asked. Perhaps girls in the early grades respond to such requests positively because they involve personal interactions with the teachers and opportunities to please them, and girls in higher grades respond less positively because they realize that they are being reminded of their responsibilities rather than rewarded. Also, fourth and fifth grade girls usually are given increasing responsibilities around the home and begin to resist these rather than respond enthusiastically as they did when they were younger. Perhaps some of this generalizes to the school situation and the teacher. In any case, the

girls started out clearly more oriented toward pleasing the teacher than the boys, but this orientation gradually disappeared until the girls were at least as disinterested as the boys in pleasing teachers or gaining their approval through tattling, showing off their work, or performing chores for them.

Another finding suggesting the same general pattern of dynamics concerned the teachers' use of warnings when students misbehaved. Boys were given more warnings (compared to simple management responses) in second grade, but girls were more likely to be warned thereafter. This is a proportion variable rather than a rate measure, so that boys received greater numbers of absolute warnings because they misbehaved much more often. However, in proportion to the number of times that they did misbehave, girls were more likely to be warned than boys. This suggests that teachers had rigid expectations for girls and were more likely to respond negatively when girls violated those expectations through disobedience. This finding fits with many others in reflecting sex role socialization in our society, although it conflicts with the idea that teachers favor girls in their interactions with students.

(Note: The interaction concerning sullenness has been dropped because the frequencies are too low to mean anything.)

Discussion

The findings reinforce the importance of the sex of student and provide some interesting information about grade level as context variables influencing teacher-student interaction in classroom processes generally. The data for

student sex again reveal the greater salience and activity level typically seen for boys. Misbehavior by boys and negative teacher reactions in response to it were much in evidence, as expected, although the clusters of positive interactions involving boys were not as obvious as in several previous studies. Perhaps the major contribution of the present study with regard to sex differences was the demonstration that boys misbehave much more often and more seriously than girls, are more often defiant or sullen in response to teachers, and show much less evidence of positive orientation toward the teachers or desire to please them. Teachers apparently adjust to these sex differences rather than persist in trying to change the boys' attitudes or behavior (beyond demanding a certain minimum).

The sex differences reported are just indicative of a broad range of individual differences to be found in any individual classroom on such variables as achievement levels, achievement motivation, willingness and ability to assume independent responsibility for completing work and keeping classroom rules, identification with teachers vs. alienation from them, degree of value placed upon pleasing teachers and/or getting rewarded by them, and many others. These need to be taken into account in types of research where they are particularly relevant. One type is research that attempts to evaluate teachers' classroom management skills. Teachers with a lot of students who act like the typical boy in the study will be facing a different situation than teachers with a lot of students who act like the typical girls. The former group will have a more difficult task, and may look like less skilled classroom managers unless these differences in class difficulty are taken into account in making comparisons between teachers. The data also

imply that praise, criticism, and other teacher attempts to control student behavior through reward and punishment cannot be evaluated accurately simply by coding the frequency of certain teacher behavior assumed to be rewarding or punishing. A functional analysis in the tradition of behavior modification is required to determine whether or not a presumed reinforcer actually has any reinforcing potential at all, and if so, what kind.

The grade level differences have several implications for research and teacher education. First, there is a gradual change in emphasis in the instructional content as one proceeds through the elementary grades. The early grades focus on mastery of the fundamentals and involve much drill and practice with opportunity for continuous monitoring and individualized feedback from the teacher. There is more small group instruction, and very little general class discussion. This pattern gradually changes as students do master the fundamentals and begin to use them to learn other content. As this occurs, more whole class activities are conducted, and genuine discussions being to appear more often. At this point, the use of classroom coding systems focusing on variables relating to classroom discussions become more appropriate, where it was not very appropriate or useful in the earlier grades.

Differences in the nature and importance of socialization of students in addition to instruction of students also occur. Much teacher time is spent socializing students to the pupil role in the early grades, and teachers spend much time (appropriately?) ignoring or refusing inappropriate requests and initiating contacts with students to get them to do things that they are supposed to do without being reminded. The students tend to be adult oriented and willing to conform in the early grades, but lack of familiarity

with schooling and immature cognitive structures make this initial socialization process a long and spotty one. Thus, although teachers in the early grades usually do not have to deal with defiance or other serious threats to their authority, they do have to spend much time reminding students about what to do and generally socializing them to school rules. As a result, many interactions observed in the classroom involve shaping desired behaviors in the area of personal responsibility.

Teachers working in the higher elementary grades do not have to do much of this, because it has been accomplished in the early grades by other teachers. In fact, the higher elementary grades are notable for their focus on academic concerns and deemphasis on both socialization and personal relationships with teachers. As has been noted by many developmental psychologists, children at these ages tend to be stable and adjusted to the expectations for them, and they usually concentrate on learning. Although there was only a hint of it in the data presented here, other data suggest that this changes around 6th and especially 7th grade, as the children enter adolescence and begin to develop strong peer orientations and resistance to authority figures.

From the viewpoint of students, schooling becomes a much more public affair than it was in the earlier grades. Interactions with the teacher are more likely to occur in public response opportunity situations than in private contacts, and responses are more likely to be given in whole class situations than in small groups. Teachers are less likely to be critical or punitive, but they also are less likely to be warm and personal in their interactions, at least those that occur in public. Except for those few students who remain teacher oriented and are treated reciprocally by the

teachers, interactions with teachers become less personalized and more a matter of role (student to teacher rather than person to person).

For the teacher, teaching in the later elementary grades is less personalized, because students value attention and reinforcement from teachers much less than they did in the past. In fact, for many students, public rewarding by the teacher effectively serves as a punishment, causing them embarrassment at the time and difficulties in the peer group later. Teachers who do not recognize and accept this may find their students deliberately disobeying or otherwise taking actions to create some distance between themselves and the teacher in order to improve their peer relations. In any case, it appears that the deemphasis on reward systems and increasing emphasis on academic matters that occurs in these grades are appropriate, because the students are generally well socialized to the pupil role and because teacher praise and reward techniques that worked in the past are less likely to be successful now.

Teachers seem to recognize and adjust appropriately to student individual differences, continuing to praise and provide rewards such as opportunities to perform classroom tasks to those students who respond favorably to them, but not persisting with ineffective techniques when they do not work. Teachers also adapt to student differences in participation in class discussions and lessons, allowing boys to call out answers and calling on them as non-volunteers more frequently to compensate for the fact that they volunteer less often. In general, it appears that teachers respond differentially to the contrasting problems and opportunities that different students present. This may be conscious and deliberate or unconscious and due to

conditioning of teacher behavior by students, but in any case it does occur and appears appropriate. An important implication here is that differential treatment of different students does not in itself constitute inappropriate teacher behavior, as sometimes is suggested. Some students need more praise than others; certain students actually don't need and don't want praise; some students benefit from criticism; some students learn well when allowed to listen most of the time but would become anxious if forced to participate too often or at the wrong times; and so on. The sex and grade differences presented here provide some guidance concerning student individual differences that affect the appropriateness of particular teacher behaviors in particular contexts. The primary challenge facing classroom researchers at the moment is devising ways to take these and other context variables into account so that classroom processes can be coded for appropriateness rather than merely counted without regard to context factors that make a difference.

Reference Notes

1. Brophy, J. & Evertson, C. Context effects on classroom process variables. (Res. Rep. 76-10). Austin, Texas: Research and Development Center for Teacher Education, 1976.

2. Brophy, J., Evertson, C., Anderson, L., Baum, M., & Crawford, J. The student attribute study: Preliminary report (abbreviated version). (Res. Rep. 76-1). Austin, Texas: Research and Development Center for Teacher Education, 1976.

3. Brophy, J., King, C., Evertson, C., Baum, M., Crawford, J., Mahaffey, L., & Sherman, G. Coding manual for student attributes study. (Res. Rep. 74-2). Austin, Texas: Research and Development Center for Teacher Education, 1974.

4. Baum, M., Brophy, J., & Evertson, C. Sex and grade differences in the interactions and classroom behaviors of children in grades two through five. (Res. Rep. 75-18). Austin, Texas: Research and Development Center for Teacher Education, 1975.

References

Brophy, J. & Evertson, C. Learning from teaching: A developmental perspective. Boston: Allyn and Bacon, 1976.

Dunkin, M. & Biddle, B. The study of teaching. New York: Holt, Rinehart and Winston, 1974.

Rosenshine, B. Classroom instruction. In N. L. Gage (Ed.), The Psychology of Teaching Methods, Part I, NSSE, Chicago: University of Chicago Press, 1976, 335-371.

Stallings, J. Implementation and child effects of teaching practices in Follow Through classrooms. Monographs of the Society for Research in Child Development, 1975, 40, (7-8, Serial No. 163).

Table 1. Distributions of Students

in 27 Classrooms by School, Sex, and Grade

School	Grade								
	2nd		3rd		4th		5th		Total
	M	F	M	F	M	F	M	F	
1	6	4	7	7	20	22	-	-	66
2	12	10	18	13	5	9	6	6	79
3	16	23	21	22	-	-	-	-	82
4	-	-	-	-	51	42	19	23	135
Totals	34	37	46	42	76	73	25	29	
	71		88		149		54		362

Table 2. Grade and Sex Means

for Classroom Process Measures[1]

Response Opportunities and Contacts with the Teacher

	Grade Means				Sex Means		Interaction Means			
	2	3	4	5	M	F	2	3	4	5
1. No. of dyadic contacts per child	7170	7186	5557	6398	7029	6127				
2. No. of response opportunities per child	1284	1066	1527	1776						
3. Prop. of dyadic contacts which were response opportunities	.20	.17	.28	.28						
4. No. of general class response opportunities per child	751	409	910	1530						
5. No. of small group response opportunities per child	532	657	617	246						
6. Prop. of response opportunities in general class (vs. small groups)	.66	.56	.64	.86						

	Grade Means				Sex Means		Interaction Means			
	2	3	4	5	M	F	2	3	4	5
7. Prop. of general class response opportunities given called out answers	.04	.09	.18	.20	.16	.10				
Praise and Criticism										
8. Prop. of non-volunteers called on in small groups given praise	.04	.00	.16	.11						
9. Prop. of general class response opportunities in which non-volunteers received criticism	.00	.00	.01	.02						
Frequencies and Types of Private Contacts										
10. Prop. of all dyadic contacts (excluding behavioral) which were private non-academic	.52	.64	.48	.40	.48	.54				
11. Prop. of teacher afforded contacts which were work related	.57	.49	.55	.71						

	Grade Means				Sex Means		Interaction Means			
	2	3	4	5	M	F	2	3	4	5
12. Prop. of teacher afforded contacts which were housekeeping	.29	.29	.24	.19						
13. No. of routine teacher afforded housekeeping per child	319	339	235	190						
14. Prop. of child initiated contacts which were work related	.54	.48	.61	.71	.62	.56				
15. No. of child initiated work contacts per child	1185	1354	1163	1824						
16. Prop. of child initiated contacts which were approval seeking	.08	.09	.04	.03	M	F	M .09	.07	.04	.02
							F .07	.12	.04	.04
17. No. of child initiated approval seeking contacts per child	232	338	92	98	149	231				
18. Prop. of child initiated contacts which were work or approval seeking	.61	.58	.65	.75						

	Grade Means				Sex Means		Interaction Means			
	2	3	4	5	M	F	2	3	4	5
19. Prop. of child initiated contacts which were housekeeping	.07	.04	.05	.03			M .03 F .11	.04 .04	.05 .05	.04 .02
20. Prop. of child initiated contacts which were tattles	.08	.04	.02	.02						
21. No. of child initiated personal contacts per child	306	442	250	237						
22. Prop. of child initiated contacts which were social	.05	.07	.11	.09						
23. Prop. of child initiated work contacts refused	.08	.02	.02	.02						
24. Prop. of child initiated social contacts refused	.23	.08	.04	.03						
25. Prop. of child initiated social contacts given brief feedback	.63	.82	.87	.90						

	Grade Means				Sex Means		Interaction Means			
	2	3	4	5	M	F	2	3	4	5
Behavioral Contacts										
26. Prop. of dyadic contacts which were behavioral contacts	.22	.19	.13	.08	.20	.11				
27. No. of behavior related contacts	2051	1787	903	832	1896	918				
28. Prop. of behavioral contacts which represented aggression toward peers	.04	.03	.02	.06						
Behavioral Praise/Criticism/etc.										
29. Prop. of behavioral contacts which were behavioral praise	.13	.04	.02	.03						
30. Prop. of child's behavior was held up as a good example	15	8	13	48						
31. Prop. of behavioral contacts responded to with non-verbal intervention	.08	.09	.05	.03						

	Grade Means				Sex Means		Interaction Means			
	2	3	4	5	M	F	2	3	4	5
32. Prop. of behavioral contacts responded to with management	.49	.54	.60	.66	.62	.53				
33. Prop. of typical misbehaviors disciplined by management	.63	.59	.65	.74						
34. Prop. of typical non-disruptive misbehaviors disciplined by management	.66	.61	.68	.77						

[1] All group means are significant at the .05 level or less.